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AGRICULTURAL BIOTECHNOLOGY ANNUAL REPORT

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Report Highlights:

German society remains conflicted regarding plant biotechnology and this is reflected in mixed government policies and messaging. Public rejection of biotech crops is widespread, and no foods labeled as 'GMO' are sold in Germany. There is no commercial biotech crop production, and biotech test plots are routinely destroyed by vandals. The German government has banned the planting of some EU-approved biotech crops and farmers and churches have instituted biotech free-zones. At the same time, Germany is home to world-class companies that develop and supply biotech seeds globally. German's voting record in the EU on approving new biotech varieties has been largely positive. Germany is also a major consumer of imported biotech animal feed.

Section I. Executive Summary:

Germany, the most populous and economically powerful country in the European Union (EU), is quite influential in agricultural policy, both within the EU and globally. German society remains conflicted regarding plant biotechnology (also called genetically modified organisms or GMOs) and this is reflected in mixed government policies and messaging. Public rejection of biotech crops is widespread. For nearly a generation, German environmental and consumer activists have protested against the use of biotechnology in agriculture, both in Germany and globally. Biotech test plots – which are used both as a research tool and as a required part of the EU regulatory approval process - are routinely destroyed by vandals, to the point where test plots are no longer attempted in Germany. The German government has banned the planting of an EU-approved biotech corn. Some local governments and organizations within Germany have instituted biotech-free zones.

At the same time, Germany is home to world-class developers of biotech crops, such as Bayer CropScience, BASF, and KWS. These companies are major suppliers of biotech seeds and technologies to markets outside of Europe. The German government also supports continued research into biotech crops. Germany is a major consumer and importer of biotech plant products, using more than 6 million metric tons of biotech soybean meal for animal feed.

There is little prospect of developing a German market for biotech crops beyond soybeans. In addition, political, business, regulatory, and social barriers raise questions about the long-term competitiveness of German plant biotechnology. There have been several examples of German firms relocating biotech crop research, development, and marketing to countries where commercial markets exist for these products and there are functioning regulatory approval systems. Similarly, Germany's "best and brightest" plant breeders have been known to pursue career opportunities abroad.

Section II. Plant Biotechnology Trade and Production:

Trade

Germany is a major livestock producer and is dependent upon imported soybeans and soybean meal as a feed protein source. Germany consumes more than 6 million metric tons (MMT) of soybean meal equivalent annually, nearly all of it produced from biotech varieties. The main suppliers are Argentina, Brazil and the United States. Although soybeans are the largest U.S. agricultural export to Germany, official data suggest the U.S. share of the German soybean market was only about 13% in 2010.

For the past several years, the German Green Party, supported by a range of NGOs, has introduced policy proposals to end the importation of soybeans into Germany. The use of biotechnology in soybean production is a driver behind this movement. Under several proposals, soy imports would be replaced by domestically produced pulses and other protein crops. Although German grown (non-biotech) rapeseed meal has become more common in animal feed rations, soybean meal remains the protein feed ingredient of choice because of its relative feed value and price.

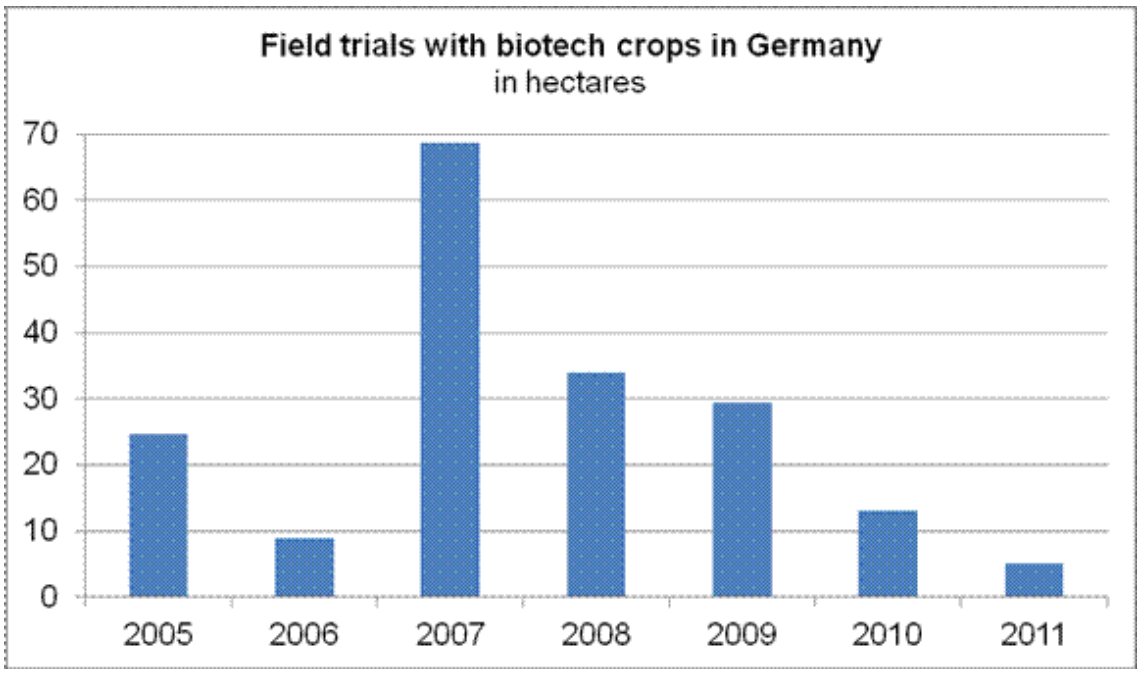
Cultivation and Research Hindered by Vandals, Liability

There is currently no commercial production of biotech crops in Germany. In addition, biotech seeds are not produced in Germany for sale abroad. However, German seed companies -- including Bayer CropScience, BASF, and KWS – supply biotech seeds to farmers worldwide from production sites outside Europe. KWS, for example, is a leading supplier of biotech sugar beets to U.S. farmers.

Earlier in 2011, there was a very small planting of the biotech "Amflora" industrial starch potato, which is produced by the German company BASF. Earlier this year, a two-hectare Amflora test plot in Saxony-Anhalt was destroyed by biotech opponents.

Monsanto's MON 810 insect-resistant corn was cultivated in Germany until April 2009, when it was banned by Food, Agriculture, and Consumer Protection Minister Ilse Aigner. In May 2009, the Higher Administrative Court rejected Monsanto's appeal to lift the cultivation ban. (For more details, please see our GAIN report dated June 2, 2009.)

Germany companies and universities have in the past conducted small field trials of biotech plants but the number of trials has decreased over the past few years. In 2007, experimental releases totaled nearly 70 hectares but by 2011, the area had dropped to five hectares. The main crops tested were sugar beets, corn, and wheat.



German law requires the exact location of a test plot be made public on the internet, which makes it easy for vandals to act (here is a link to the mapping system). For example, in July 2011, two test plots with wheat and potatoes were destroyed by activists in the eastern German states of Mecklenburg-Vorpommern and Saxony-Anhalt. In this case, a large group drove to a remote rural location, detained a security guard, and destroyed the crops. Subsequently, some of the perpetrators gave anonymous press interviews, portraying their extra-legal acts as morally justified because they save Germany from the dangers of biotechnology and corporate control of farming. There have been no convictions in these cases. Vandalism remains a barrier to conducting field trials in Germany.

In addition, under German law, those planting test plots may be held liable for honey that tests positive for pollen from biotech crops. This potentially imposes further costs and acts as another disincentive to researchers and developers.

Biotech-free areas

Groups of German farmers have declared about 188 regions in Germany as biotech-free zones. The first biotech-free region in Germany was founded in 2003. The total area covered by these biotech-free zones in 2011 amounts to about 1.68 million hectares with 23,400 participating farmers. This is equivalent to nearly 10 % of Germany's farmland (arable land plus grassland). Biotech-free areas are formed by voluntary agreement among farmers to not plant biotech crops in the region and there is no legal enforcement mechanism connected to the declaration. In part these declarations are used for tourism purposes. Biotech-free areas

are especially popular in the southern state of Bavaria.

A few of the state governments (called *Laender*) in Germany also seek to become biotech-free. The governing coalitions of political parties for the states of Baden-Württemberg, Rhineland-Palatinate, Mecklenburg-Vorpommern and Saarland all have 'biotech free' in their coalition agreements. In Thuringia, North-Rhine Westphalia and Bremen, growing biotech crops on state-owned land is prohibited. The Green Party is part of the governing coalition in all these states, except Thuringia. For more information see: http://www.gentechnikfreie-regionen.de

Germany's influential Catholic and Protestant churches have also taken strong anti-biotech positions and biotech crops are generally not allowed on church-owned lands. Churches have significant agricultural holdings in Germany. Land rental contracts usually forbid farmers from growing biotech crops on church owned-land and to refrain totally from growing biotech crops if even part of the land they work is rented from a church.

Section III. Plant Biotechnology Policy:

Germany within the EU Regulatory Framework

As the largest EU member state, Germany plays a significant role in the regulatory acceptance of biotech crops in Europe. This includes voting at the EU level on approvals, transferring and incorporating EU laws into German legislation, establishing liability for biotech 'contamination,' and enforcement. Member states also carry out initial risk assessments for biotech crops.

Within the EU, biotech crops are authorized case-by-case based on particular uses defined by the applicant. The EU regulatory framework for biotechnology primarily works through regulations and directives. (Our GAIN report dated July 29, 2011 has much more detail on the EU regulatory process.) The Federal Office of Consumer Protection and Food Safety (known by its German abbreviation BVL) is the German authority responsible for regulating GMOs. The BVL is an autonomous part of the Federal Ministry of Food, Agriculture and Consumer Protection (BMELV).

In practice, the BVL receives a notification of a biotech approval request, passes the notification dossier to the European Food Safety Authority (EFSA), checks the completeness and quality of the data supplied in the dossier, evaluates the risk analysis of the notifier, and issues its own statement to the EFSA. BVL also evaluates the safety of GMOs that are used in contained systems (e.g., for research or industrial production). It also issues environmental release permits and conducts environmental monitoring. The BVL does this under the authority of Germany's Genetic Engineering Act, which implements EU guidelines as national

legislation.

While primary responsibility for biotechnology policy in Germany rests with BMELV, the Ministries of Economics, Health, Research and Environment are also involved in the decision-making process and have input into Germany's voting decisions in EU committees and councils.

The German voting pattern on approvals at the EU level contrasts sharply with its local regulation of biotech crops. In the case of MON 810 for example, Germany voted to approve it, and German farmers cultivated MON 810 for several years. However, against scientific evidence, MON 810 was banned in by Germany in April 2009. Since the mid 1990's, there have been 47 biotech product approvals voted upon at the EU level. There have been only two German objections in recent years (for EH 92-527-1 potato and TA 45 rapeseed). This is a strong indication that, on the EU-level, Germany supports regulatory approval for biotech crops.

Current Political Situation

In 2009, Chancellor Merkel's Christian Democratic Union (CDU)/Christian Socialist Union (CSU) party was re-elected and entered into a coalition with the Liberal Democrat Party (FDP). Their 2009 coalition agreement states, "Biotechnology has been established worldwide as an important new industry for research, business and agriculture, and we want to responsibly utilize the potential of green genetic engineering. The protection of people and the environment remains the primary objective of Germany's genetic engineering law. We support a greater scientific focus and more efficient authorization procedures for genetically modified organisms at the EU level."

Coexistence

Germany's policy of "coexistence" between biotech and conventionally-grown and organic crops is complex and is becoming increasingly untenable. German federal and local governments have put into place an assortment of planting bans, segregation distances, and other requirements. For instance, Germany requires a minimum distance of 150 meters -- a football field-and-a-half -- between biotech and conventional fields, and a minimum distance of 300 meters between biotech and organic cornfields.

In December 2010, a scientific policy advisory board for the German Ministry of Food, Agriculture, and Consumer Protection published additional recommendations for coexistence. While not binding, the recommendations call for economically unrealistic segregation and cultivation measures. The report's recommendations underscore how coexistence regulations

can be used to discourage farmers from cultivating biotech crops.

Testing for Biotech Events

Germany has a decentralized system for testing and controlling the illegal entry of biotech products into Germany. The control authority with the competence to ensure that no unauthorized biotech product enters the German retail market is with the 16 German states or *Laender*. The *Laender* have their own monitoring and sampling plans. Since the experts know what kind of products potentially contain biotech events, they specifically sample for these products. Sampling is primarily done at the wholesale and the processing level.

Germany fully enforces EU rules relating to biotech crops and uses the Rapid Alert System for Food and Feed (RASFF) to report food safety issues to consumers, the trade, and other member-states. In the case of biotech crops, Germany's 16 *Laender* test for unauthorized biotech products and report violations via the RASFF. As of November 23, 2011 there were 11 notifications. These were primarily noodles from China containing unapproved biotech rice.

Germany Rejects EU Commission 'Opt Out' Proposal on Cultivation

In July 2010, the EU Commission proposed allowing EU members to decide individually whether or not they allow the cultivation approved biotech crops. The proposed legislative amendment would allow an EU country formally to 'opt out' of biotech crop cultivation. The Commission's proposal has not yet been approved by the EU Council because of a lack of support from a 'qualified majority' of EU member states. Still, the proposal raised important questions about the EU single market and the role of science in future biotech legislation.

According to press reports, BMELV Minister Aigner was pressed by her political party, which is based in the southern state of Bavaria, to support the proposal because it would allow Bavaria to legally become a biotech-free state. Surveys indicate most Bavarians are opponents of biotech and an 'opt out' could be popular. In contrast, Federal Chancellor Merkel, a trained physicists, and research minister Schavan are opposed to a regionalization approach. They fear that Germany is losing ground in scientific research and that biotech companies could move jobs abroad. They also raised concerns about EU common market principles and the consistency of legislation among EU countries.

The Honey Case

A European Court of Justice ruling in September 2011 (Case C – 442/09, Karl Heinz Bablok

and Others *versus* Freistaat Bayern) found that biotech plants contained in honey should be considered as food ingredients. As such, pollen containing traces of MON 810 corn requires an authorization. (Monsanto's original application for authorization to cultivate MON 810 did not include pollen.) The decision created uncertainty because an EU directive (Council Directive 2001/110/EC) says that pollen is a natural constituent of honey, an opinion shared by other international standard setting bodies. The European Commission asserts that the judgment cannot be appealed.

Testing is technically very challenging and includes counting and identifying pollen particles in honey and making assumptions about the percentage of biotech crops represented within the population of the isolated pollen. There is no standardized test at the German or EU level but the *Laender* of Lower Saxony has nonetheless pressed ahead with its own method.

In Germany the opponents of biotech welcomed the court's decision as a clear victory for consumer protection and agricultural production without biotech. Environmental and organic groups also stress that the decision has confirmed the zero tolerance level of non-approved biotech in the EU. Many in the honey trade, however, view the decision as counter to the facts (pollen is a natural part of honey) and unworkable. The German Beekeepers Association advocates a ten-kilometer separation between biotech field trials and beehives.

The U.S. exports small amounts of honey to Germany, valued at $29,291 in 2010. However, honey demand in Germany exceeds domestic supply. About 80% of the honey consumed is imported, most of it from Argentina, Mexico, Chile and Brazil, where biotech crops are common. With the court's decision, this honey is no longer marketable if it contains many types of biotech pollen. To resolve the administrative problems associated with the case, and to avoid trade disruptions, the Commission could amend a Directive relating to honey to clarify that pollen is a natural constituent of honey and not an ingredient. Such an amendment would require the agreement of both the Council and the Parliament.

Government Support for Biotech Crops

The German Federal Ministry for Education and Research (known by its German abbreviation BMBF) supports scientific institutes, companies and individual researchers through specific funding programs. Biotechnology is one of the key technologies of a strategy adopted by the federal government in 2006 and has continued since 2010 under the title, "High-Tech Strategy 2020." Under this strategy, the German Federal Government seeks to lead in Europe in terms of number of biotech enterprises, sales and employment figures. To advance research, the federal government has just launched a "National Research Strategy Bio Economy 2030". At present, there are 25 different ongoing programs to support scientists financially with research projects in this field.

Statistics from the ministry show that the overall German biotech sector is growing without providing a breakout of 'green biotech.' In 2010 there were 538 companies with 15,480 employees. They had a 10% increase in sales over the previous year. Total sales in 2010 were nearly €2.4 billion or about $3.3 billion.

Section IV. Plant Biotechnology Marketing Issues:

For nearly a generation, German consumers have been exposed to consistent messaging from non-governmental organizations that biotech crops are dangerous, a product of exploitive capitalism, and even immoral. As a result, the use of biotech crops in foods is a highly contentious and politicized issue. Opponents to biotechnology often point to polling results that show that about 70 percent of the German population opposes this technology. Other polls, if questions are asked differently, come to the result that about 83 percent of the people interviewed did not see any problem with biotech labeled products being sold on food retail shelves. Consumer attitudes regarding biotech are based on general values, and efforts to convince may be perceived as an attack on the legitimacy of personal values. Since biotech crops were first introduced in the mid-1990s, attempts to educate consumers and opponents about the benefits of biotech crops and about science in general have proven ineffective.

According to the Federation of Food Law and Food Science, an estimated 60 to 80% of all food in German supermarkets has come in contact with biotech products in some way. The Union of German Academies of Science has concluded that objections to biotech in agriculture lack any scientific basis, and agricultural biotech tends to find stronger support among consumers with postgraduate degrees. Because there are exceptions to EU labeling requirements (e.g., food enzymes produced from GMO micro-organisms), many German consumers do not believe there are biotech foods on the market.

Although the European Union has approved 31 biotech plants that would be theoretically legal to sell in Germany, no labeled biotech foods are on the market. One contributing factor is the concentration of the food retail sector and its vulnerability to narrowly focused consumer activists. The German retail food sector is dominated by five large retailers, which have more than 90 percent of the market, and Germany has the world's highest share of discounters in food retailing. Within this low-margin but concentrated industry, anti-biotech NGOs would likely target any retailer offering GMO-labeled products. This presents an unacceptable brand risk that further hinders the introduction of biotech foods.

Labeling – Voluntary Programs Market Against GMOs

Germany applies EU regulations for labeling biotech foods (Regulations (EC) 1829/2003 and

1830/2003). No 'GMO' labeled foods are currently sold in Germany. However, under EU rules, foods require a label only if biotech crops are used as an ingredient. For example, there is no labeling for meat or dairy products that come from animals fed with biotech feeds.

In 2008, the German government legislated a voluntary "gene technology-free" labeling program. In August 2009, the Ministry for Food, Agriculture and Consumer Protection introduced a standard label to help consumers better identify products and to standardize the information consumers receive. The program also has the effect of discouraging the use of biotech feeds in animal production.

Food manufacturers can now use an official label on their products if they comply with strict requirements. Interestingly, the label may not be used for products for which no biotech varieties exist, such as oranges or basmati rice, among others. The administration of this program is largely entrusted to the "Verband Lebensmittel ohne Gentechnik e.V." (non-Biotech Foods Association). As of November 2011, the Association claims that 100 companies are using the label. Eggs and cheese are the most popular products sold under this labeling scheme.

A private example for the use of non-biotech labeling as a marketing tool is "Landliebe" (Landlove). Landliebe is a popular German brand of dairy products sold by Campina GmbH, a subsidiary of the large Dutch dairy cooperative Campina. Campina became the target of public criticism in Germany for sourcing milk from farmers using biotech feeds, such as soybeans. In October 2008, Campina reacted by buying only non-biotech animal feeds for use in the production of milk sold under the Landliebe brand. Campina is now making biotech-free claims with its Landliebe milk, cream, butter and yoghurt using its own label. Many other dairy products sold by Campina do not make biotech-free claims.

Section V. Plant Biotechnology Capacity Building and Outreach:

Since 1997, the FAS Office in Germany has sent numerous policymakers, scientists, representatives from consumer organizations, farm leaders, journalists and other interested parties to the United States to learn about the U.S. system for regulating biotechnology and its use by our farmers. In addition to these trips to the United States, FAS Germany has organized a number of speaker programs for U.S. policymakers, biotech scientists and farmers to inform interested parties in Germany about the experience in the U.S. with biotech crops. The FAS Office in Germany has also participated in a number of podium discussions and seminars on biotechnology.

More recently, in December 2010, the Agricultural Counselor gave a lecture on agricultural biotechnology at Berlin's prestigious Freie Universitaet Environmental Policy Research Centre. About 100 students in a comparative policies class learned why farmers around the world are increasingly choosing to use biotech crops and about U.S. policies that have support the safe development of this strategic technology. The lecture included a spirited discussion comparing U.S. and EU approaches to regulating agricultural biotechnology.

For 2012, Embassy Berlin is planning a speaker tour featuring European plant biotechnologists who have gone abroad to continue their work. The speakers will address why they left Europe, and the implications Europe's current regulatory and social environment have for the freedom of scientific inquiry, economic competitiveness, and national prestige.